

The Genus *Allorhinocoris* in North America (Heteroptera: Miridae: Mirinae)

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Abstract.—All published records of *Allorhinocoris flavus* (Sahlberg) from North America are in error and are correctly associated with *A. speciosus* Bliven. Distinguishing features including illustrations of the male genitalia of both species are provided. A dorsal habitus of the male of *speciosus* is presented. The lectotype for *Calocoridea virescens* Poppius is designated.

The species of *Allorhinocoris* are large (length 7.30–8.50 mm) mostly yellowish-green mirines with simple, black setae and live on a wide variety of hosts. In the Pacific Northwest and northern California *Allorhinocoris* can be confused with the superficially similar species *Calocoris norvegicus* (Gmelin) and *Lygocoris pabulinus* (Linnaeus). However, *Allorhinocoris* is distinguished from these species by its larger size, unmarked pronotum with carinate lateral margins, and male genitalia. Reuter (1876) established *Allorhinocoris* to accommodate the mirine species, *Conometopus prasinus* Fieber (now *Apantillius Kiritshenko*). Sahlberg (1878) subsequently described this taxon as *flavus*. Oshanin (1910) recognized that Reuter had misidentified *prasinus* Fieber and designated *flavus* as the type species of *Allorhinocoris*.

Poppius (1915) erected the monotypic genus *Calocoridea* to accommodate his new species *virescens* based on specimens from Darjeeling (Dardjiling), India. Carvalho (1952) synonymized *Calocoridea* with *Allorhinocoris*. Poppius (1915) did not mention how many specimens were before him at the time he described *virescens*. However, in the Zoological Museum, University of Helsinki, there are two females with the identical locality label (MUSEUM PARIS, DARDJILING, HARMAND 4741-86) as in the original description. One female bears the handwritten label: *Calocoridea virescens* n. gen et sp., and a museum type no. 1[?]0072, while the other female has no additional labels. Herein, we designate the female with the handwritten label as the lectotype of *virescens*, the other female as a paralectotype, and have labeled each respectively.

We have examined the holotype of *virescens* and agree with Carvalho (1952) in placing it in *Allorhinocoris*. *Allorhinocoris virescens* possesses all the diagnostic characters of the genus: green general coloration; sparsely distributed, short, black simple setae; laterally carinate pronotum; long first antennal segment; and sulcate frons. No males of this species are known, but we predict that when one is collected the genitalia will be of the same form as the other two species illustrated herein.

In addition to its isolated distribution, *virescens* is distinguished from *flavus* and *speciosus* by the completely rounded anterior angles of the pronotum, red veins of membrane, and small black markings on the humeral angles of the pronotum, and apices of the cuneus.

The distribution of *flavus* in the Palearctic Region is uncertain. It has been recorded from as far west as Switzerland, although this record is in doubt (Wagner, 1971). It is known from western Soviet Union between ca. 45° and 70°N latitude, Siberia (Kerzhner, 1967), and from the eastern Soviet Union from 120° to 50°E longitude in the Amur River area (Kerzhner, 1988). However, Josifov and Kerzhner (1972) did not record this species from Korea nor did Lindberg (1927) record it from far eastern Russia.

Van Duzee (1916a, 1916b) first reported *flavus* in a checklist of, and key to, the mirid genera of North America. This record was apparently based on a single specimen collected in Oregon (Knight, 1927). It was also reported from the Siskiyou Mountains of northern California by Knight (1927), and Kelton (1959) illustrated the male genitalia of a specimen from the Cascade Mountains in southern Washington.

Bliven (1960) described a new species *speciosus* from northern California. It appeared to us that *Allorhinocoris* in North America consisted of two species, one predominately Palearctic with an extension into the Pacific Northwest, and an endemic species restricted to the coastal mountains of northern California.

Herein, we clarify the identity of the species of *Allorhinocoris* in North America and summarize information on its distribution and habits.

Allorhinocoris speciosus Bliven

(Figs. 1, 2b, 3h–n, 4)

Allorhinocoris flavus, Van Duzee, 1916a:38 (checklist); 1916b:207 (key to genus); 1917:321 (catalog). Knight, 1927:43 (distribution). Kelton, 1959:19, fig. 33a–c (male genitalia).

Allorhinocoris speciosus Bliven, 1960:37, figs. 6, 6a, b (new species).

Diagnosis.—Specimens of *flavus* from near the Derkul River in the Ukraine and Loginovo near the Ural Mountains provided by Dr. I. M. Kerzhner allowed us to compare this species with *speciosus*. The most striking distinction between the two species is the sexual dimorphism of *flavus*; the males are macropterous and the females are submacropterous (the cuneus and membrane are reduced with the membrane just surpassing the apex of the abdomen in dorsal view). The sexes of *speciosus* are not dimorphic. Additionally, *flavus* and *speciosus* may also be distinguished by differences in coloration, and structure of the head, pronotum, and male genitalia as follows:

(1) *Allorhinocoris flavus* is uniformly yellowish green, and without the various fuscous markings of *speciosus*, as described in “Color variation” (see Fig. 1).

(2) The longitudinal sulcus of the vertex is practically obsolete in *speciosus* and strongly present in *flavus*.

(3) The anterolateral angle of the pronotum is prominent in *flavus* and extends anteriorly to almost even with the anterior margin of the collar (Fig. 2a). This region of the pronotum in *speciosus* is produced, but does not surpass the posterior sulcus of the collar and disk (Fig. 2b).

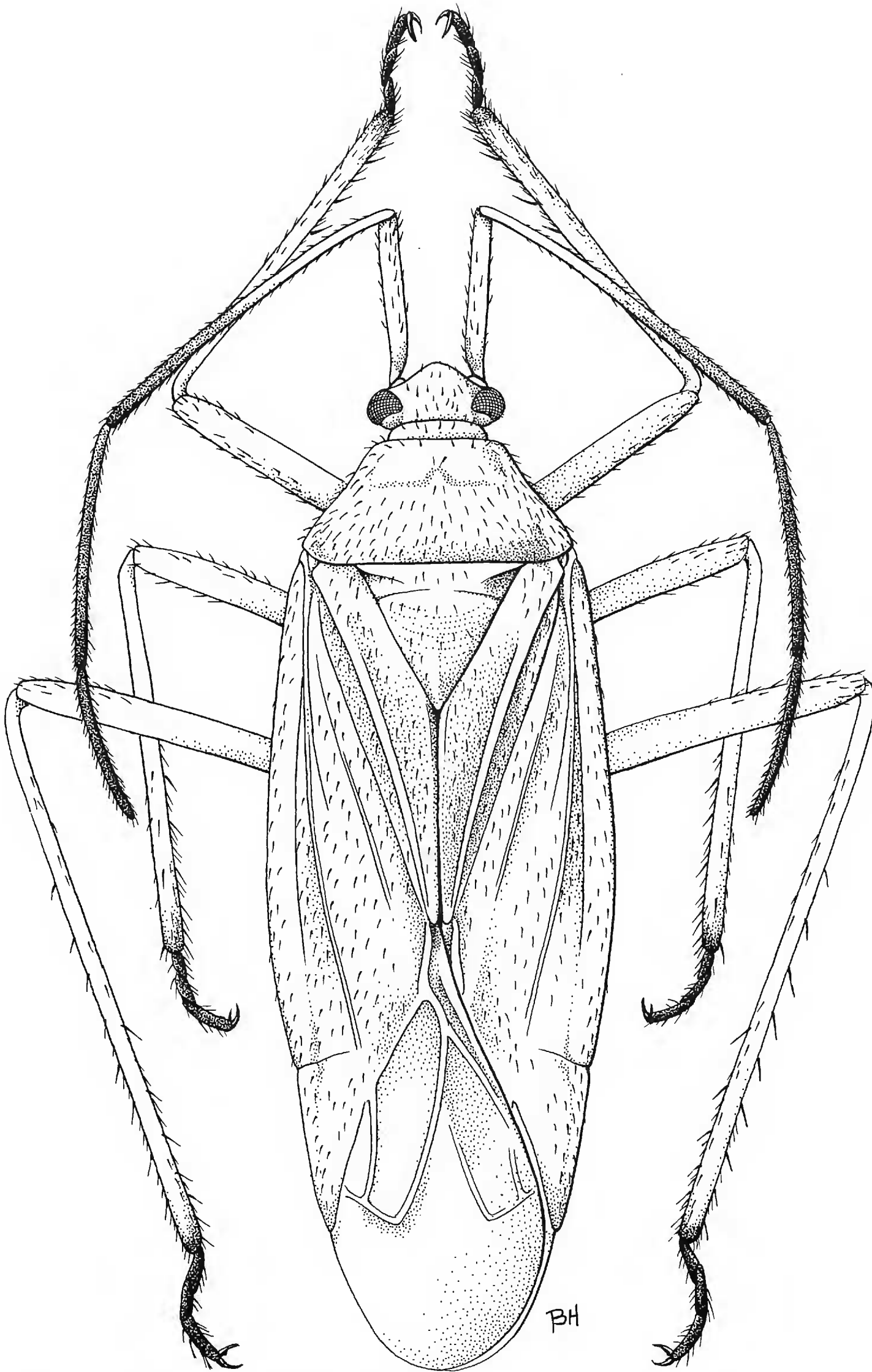


Figure 1. *Allorhinocoris speciosus*, dorsal habitus of male.

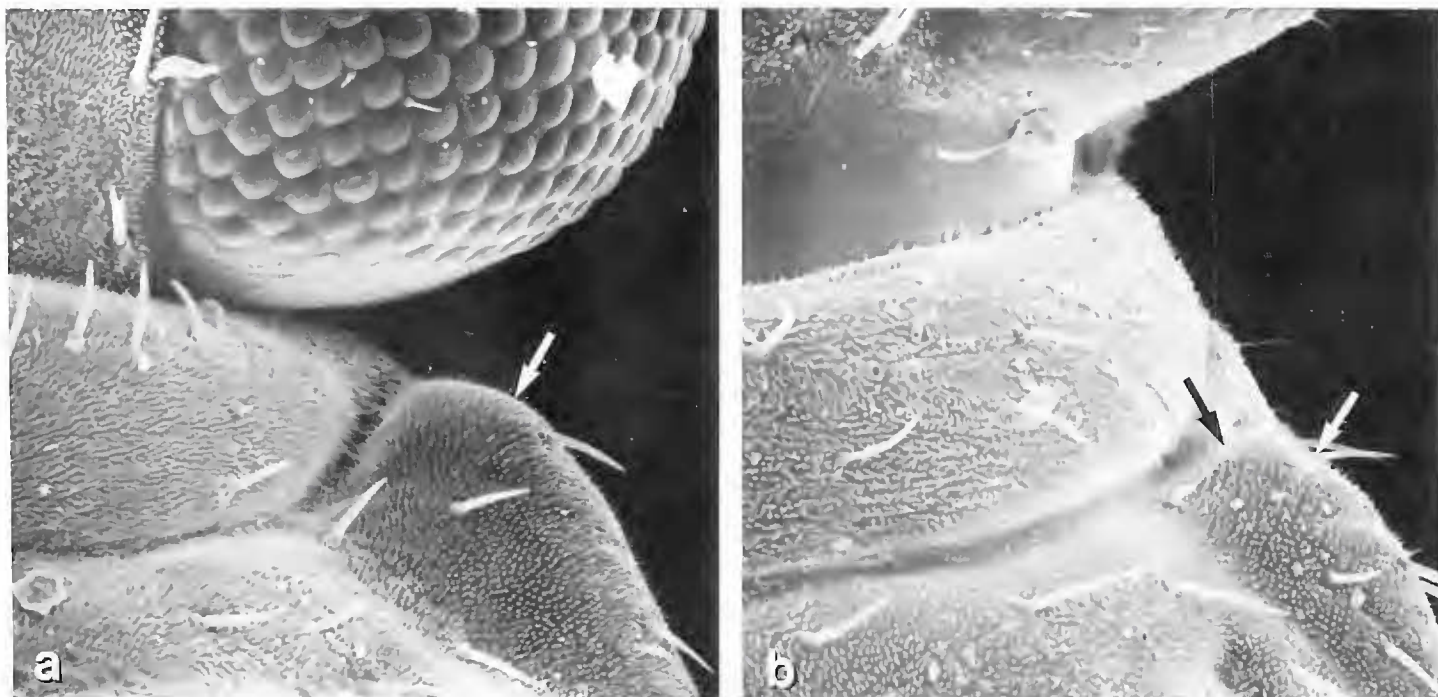


Figure 2. a, b. Dorsal view of left anterolateral angle of the pronotum. a. *flavus*. b. *speciosus*.

(4) The shaft of the left paramere of *flavus* is smooth (Fig. 3c), where as that of *speciosus* is tuberculate (Fig. 3j). Other species specific differences can be noted on the left paramere (see Fig. 3a–c for *flavus* as compared to Fig. 3h–j for *speciosus*).

(5) The apex of the right paramere is more elongated in *flavus* (Fig. 3d, e) than in *speciosus* (Fig. 3k, l).

(6) The lobal sclerite of the vesica of *flavus* is truncate and broad, with linearly arranged spinulae (Fig. 3f, g), and without a patch of basally spinulae in posterior view (Fig. 3f). The lobal sclerite of *speciosus* is rounded and narrower, with densely distributed spinulae (Fig. 3m, n), and with a patch of spinulae basally in posterior view (Fig. 3m).

As none of the specimens we examined from North America have the features of *flavus* as described above, we believe that only *speciosus* occurs in the Nearctic and that all previous published reports of *flavus* from this region (Knight, 1927; Kelton, 1959; Van Duzee, 1916a, b) are in error. Kerzhner (pers. comm.) concurs with our conclusion that the two species are distinct.

Color variation.—Typically, *speciosus* is light yellowish green, with tarsi, tibia apically, antennal segment 2 distally and all of segments 3 and 4 entirely fuscous. Several specimens from four localities in southern Oregon are slightly darker and show the following distinct color pattern: antennal segment 1 entirely dark; frons with two oblong fuscous patches parallel to, and bordering the midline; tylus with triangular fuscous spot basally; depression between calli fuscous; scutellum with faint fuscous stripe on midline; coxal cleft with dark black spot; dorsal, ventral and anterior surfaces of femora with light brown spots. This color pattern is found in both sexes, but is more defined in males (in which the parameres are also fuscous). We believe that the variable coloration of *speciosus* is without taxonomic significance, as the male parameres and vesicae of the patterned individuals do not differ from those of the lighter individuals. Specimens from other areas display some but not all of the above attributes.

Specimens examined.—Unless noted otherwise all specimens are deposited at Oregon State University (OSU) (see Fig. 4 for distribution map).—CALIFORNIA:

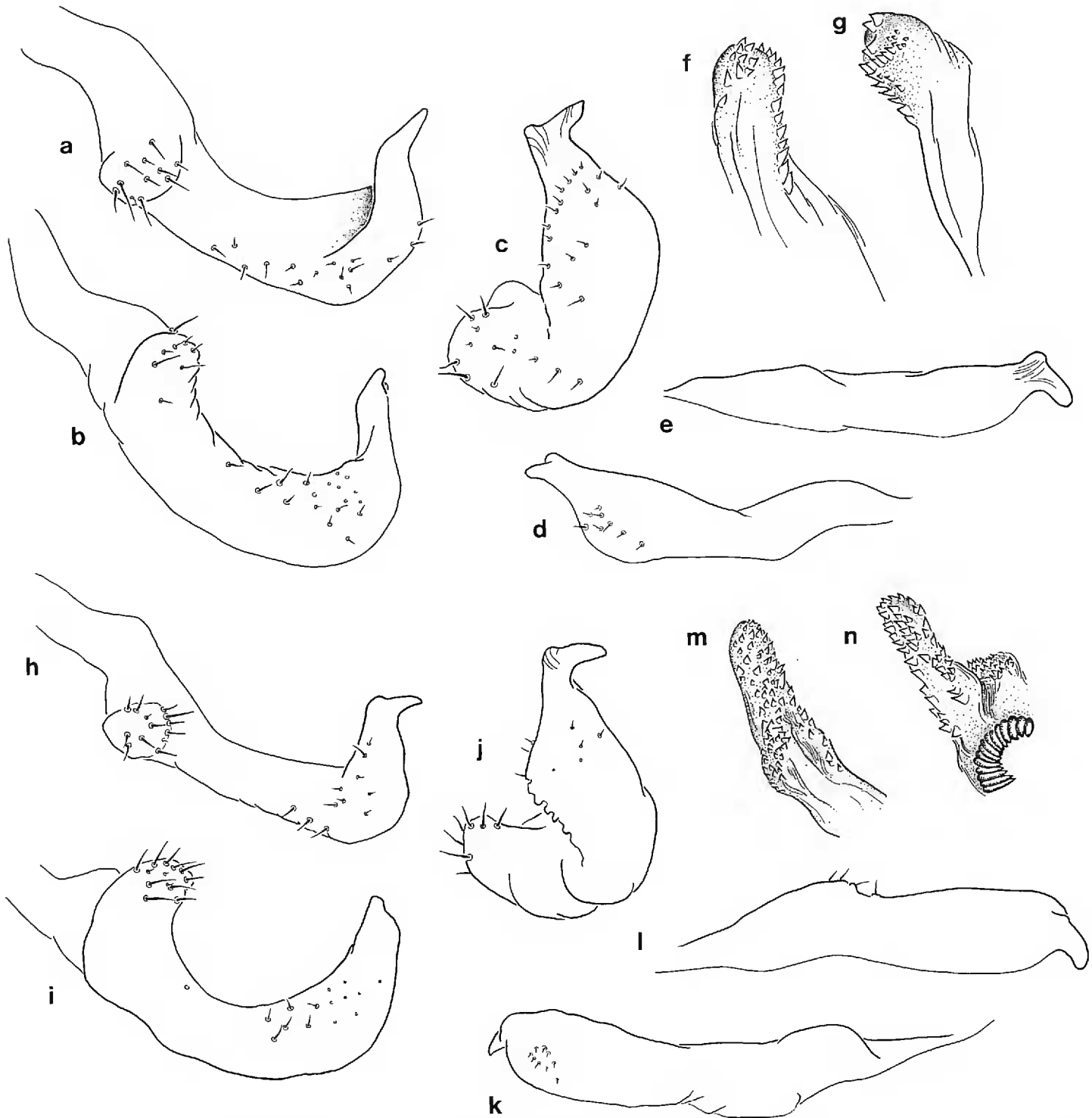


Figure 3. a-n. Male genitalic structures. a-g. *flavus*. a-c. Left paramere. a. Dorsal view. b. Lateral view. c. Distal view. d, e. Right paramere. d. Lateral view. e. Interiolateral view. f, g. Lobal sclerite of vesica. f. Posterior view. g. Anterior view. h-n. *speciosus*. h-j. Left paramere. h. Dorsal view. i. Lateral view. j. Distal view. k, l. Right paramere. k. Lateral view. l. Interiolateral view. m, n. Lobal sclerite of vesica. m. Posterior view. n. Anterior view.

Humboldt Co.: Blocksburg, June 13, 1935, H. J. Rayner, 1 ♀ (CAS); Dinsmores, B. P. Bliven: June 4, 1939, 2 ♂, 4 ♀; June 9, 1940, 1 ♀; June 21, 1942, 1 ♂; June 21, 1942, 2 ♂, 4 ♀ (all paratypes, CAS); Ft. Seward, May 23, 1935, E. W. Baker and M. A. Cazier, 1 ♂, 1 ♀ (AMNH); Larabee Valley, June 26, 1938, B. P. Bliven, 6 ♂, 9 ♀ (paratypes, CAS); mountains nr. Korbel, July 20, 1929, E. C. Van Dyke, 1 ♀ (CAS); Redwood Crk., Mad River Divide, July 3, 1931, 1 ♀ (CAS). *Mendocino Co.*, Ukiah, Purdy's Mayakane Range, June 20, 1937, I. McCracken, 9 ♂, 18 ♀ (CAS). *Nevada Co.*: Donner Lk., June 3, 1935, I. McCracken, on thistle, 4 ♂, 11 ♀ (CAS); 12 mi S of Grass Valley, May 11, 1930, E. P. Van Dyke, 1 ♀ (CAS). *Siskiyou Co.*: Mt. Eddy, July 24, 1980, ex *Lupinus croceus*, 1 ♂, 1 ♀ (USNM);

Willow Crk. Mt., Shovel Crk. Meadow, Aug. 10, 1962, W. Peters and J. Schuh, 3 ♂, 4 ♀; Siskiyou Co., June 1, 1911, F. W. Nunenmacher, H. H. Knight collection, 1 ♀ (det. H. H. Knight; USNM). *Sonoma Co.*, Mark West Sprgs., May 11, 1930, E. P. Van Dyke, 1 ♀ (CAS). *Tehama Co.*, 21 mi NW of Red Bluff on Rt. 36, Apr. 26, 1980, Russell and Schwartz, 4 ♂, 2 ♀ (AMNH). *Toulumne Co.*: 10 mi NW of Yosemite, July 21, 1946, 6000 ft, H. P. Chandler, 2 ♂ (CAS). *Trinity Co.*: Carville, June 20, 1913, E. C. Van Dyke, 1 ♂ (CAS); Van Duzen Rd., B. P. Bliven: June 5, 1949, 3 ♀; June 25, 1944, 1 ♂; June 26, 1960, 2 ♂, 3 ♀; July 6, 1952, 2 ♀ (all paratypes, CAS); Zenia, June 19, 1935, H. J. Rayner, 1 ♂ (CAS). OREGON: *Benton Co.*: Mary's Peak: July 12, 1963, P. Oman, 1 ♂; Aug. 1, 1975, W. N. Mathis, 3 ♂, 1 ♀; Aug. 7, 1968, 1 ♂; below summit, 3350 ft, Aug. 10, 1971, J. D. Lattin, 2 ♂, 3 ♀. *Clackamas Co.*: Mt. Hood: 5500 ft, September 9, 1976, J. D. Lattin, 1 ♂, 1 ♀; 1 mi below Timberline Lodge, Aug. 9, 1976, J. D. Lattin, 1 ♂, 1 ♀. *Deschutes Co.*, Deer Crk., 4600 ft, Aug. 9, 1935, H. A. Scullen, H. H. Knight collection, 1 ♀ (USNM). *Hood River Co.*: Cooper Spur, July 17, 1978, J. Schuh, 1 ♂, 1 ♀ (AMNH); Hood River Meadows, 35 mi S of Hood River, July 28, 1965, K. Goeden, 3 ♂, 4 ♀; Mt. Hood, Alpine Cmpgrd., 5500 ft, Aug. 24, 1980, J. D. Lattin, 16 ♂, 8 ♀; 28 mi S of Hood River, July 3, 1970, K. Goeden, 1 ♂; 12 mi S of Parkdale, Aug. 13, 1943, Schuh and Rieder, 1 ♂ or ♀. *Jackson Co.*: Ashland Pk., 6500 ft, Aug. 6, 1950, B. Malkin, 2 ♂, 1 ♀ (CAS); Colstine Rd., near Siskiyou Summit, 3900 ft, July 17, 1988, A. Asquith, 1 ♂; Dead Indian Rd., July 2, 1975, B. Somney, 1 ♂; nr. Dead Indian, Soda Sprg., June 23, 1978, J. Schuh, 1 ♂ (AMNH); Green Sprgs. Summit, Hwy. 66, 4500 ft, July 17, 1988, A. Asquith, ex *Vicia* sp., 1 ♂, 2 ♀; Huckleberry Mt., 5500 ft, Aug. 4, 1951, B. Malkin, 2 ♂, 2 ♀ (CAS); Larkspur Sprgs., July 6, 1958, F. M. Beer, ex *Ceanothus*, 1 ♀; 6 mi W of Lincoln, 2 mi W of Pinehurst, June 22, 1956, G. R. Ferguson, 1 ♂, 1 ♀; Moon Prairie, July 29, 1962, J. D. Vertrees, 2 ♂, 1 ♀ (AMNH); Mt. Ashland, June 20, 1975, L. Russell, 1 ♀; Mt. Ashland Rd., 4 mi from Ashland, Aug. 10, 1962, L. G. Gentner, ex *Aster*, 4 ♂, 3 ♀; Mt. Ashland Rd., 2 mi W of Colectine Rd., ex *Penstemon* sp., A. Asquith, 3 ♂, 1 ♀; Pinehurst, 3400 ft, June 24, 1971, P. Oman, 1 ♀; 0.5 mi E of Pinehurst, ca. 3550 ft, June 27, 1979: M. D. Schwartz, sweeping undisturbed natural vegetation, 1 ♂ (AMNH); R. T. and J. Schuh, ex *Lupinus*, 1 ♂, 5 ♀ (AMNH). Roxy Ann Peak, nr. Medford, June 24, 1970, Brown and Wescott, 1 ♂ Siskiyou: June 14, 1958, Kelton and Madge, ex lupine, 8 ♂, 1 ♀ (CNC); July 5, 1951, B. Malkin, 2 ♂, 2 ♀ (CAS). Siskiyou Summit: June 24, 1974, R. L. Fischer, 1 ♂, 1 ♀; on I-5, July 4, 1982, T. J. Henry and G. M. Stonedahl, ex *Wyethia amplexicaulis*, *Phacelia hastata*, *P. heterophylla*, 4 ♂, 2 ♀ (AMNH); 8 ♂, 5 ♀ (USNM); 0.5 mi S of Siskiyou Summit, Old Hwy. 99, 4300 ft, June 27, 1979: J. D. Lattin, ex *Phacelia*, 5 ♂; R. T. and J. Schuh, on herbaceous understory, 15 ♂, 11 ♀ (AMNH); M. D. Schwartz, ex *Phacelia* and *Wyethia*, 14 ♂, 9 ♀ (AMNH); G. Stonedahl, ex *Wyethia amplexicaulis* and *Phacelia hastata*, 11 ♂, 6 ♀ (AMNH) 8 mi S of Siskiyou Summit, Old Hwy. 99, 4300 ft, June 29, 1977, J. D. Lattin, ex grass, 1 ♂, 1 ♀. *Josephine Co.*: Grants Pass, June 8, 1930, A. R. Rolfs, 1 ♂ (WSU); Oregon Caves, June 26, 1970, P. Oman, 3 ♂, 1 ♀; Oregon Caves, 3900 ft, June 27, 1972, 1 ♂, 3 nymphs; T41S, R6W, Sec. 7, Aug. 9, 1979, G. Stonedahl, 1 ♂ (AMNH). *Klamath Co.*: Crater Lake Nat'l. Park, near Red Cone, Aug. 3, 1968, Goeden and Wescott, 1 ♀; Lake of the Woods, 5000 ft, July 21, 1930, H. A. Scullen: 1 ♀ (OSU); H. H. Knight collection, 1 ♂, 2 ♀ (USNM); Pelican Butte, 1400–2200 m, July 16, 1979, R. T.

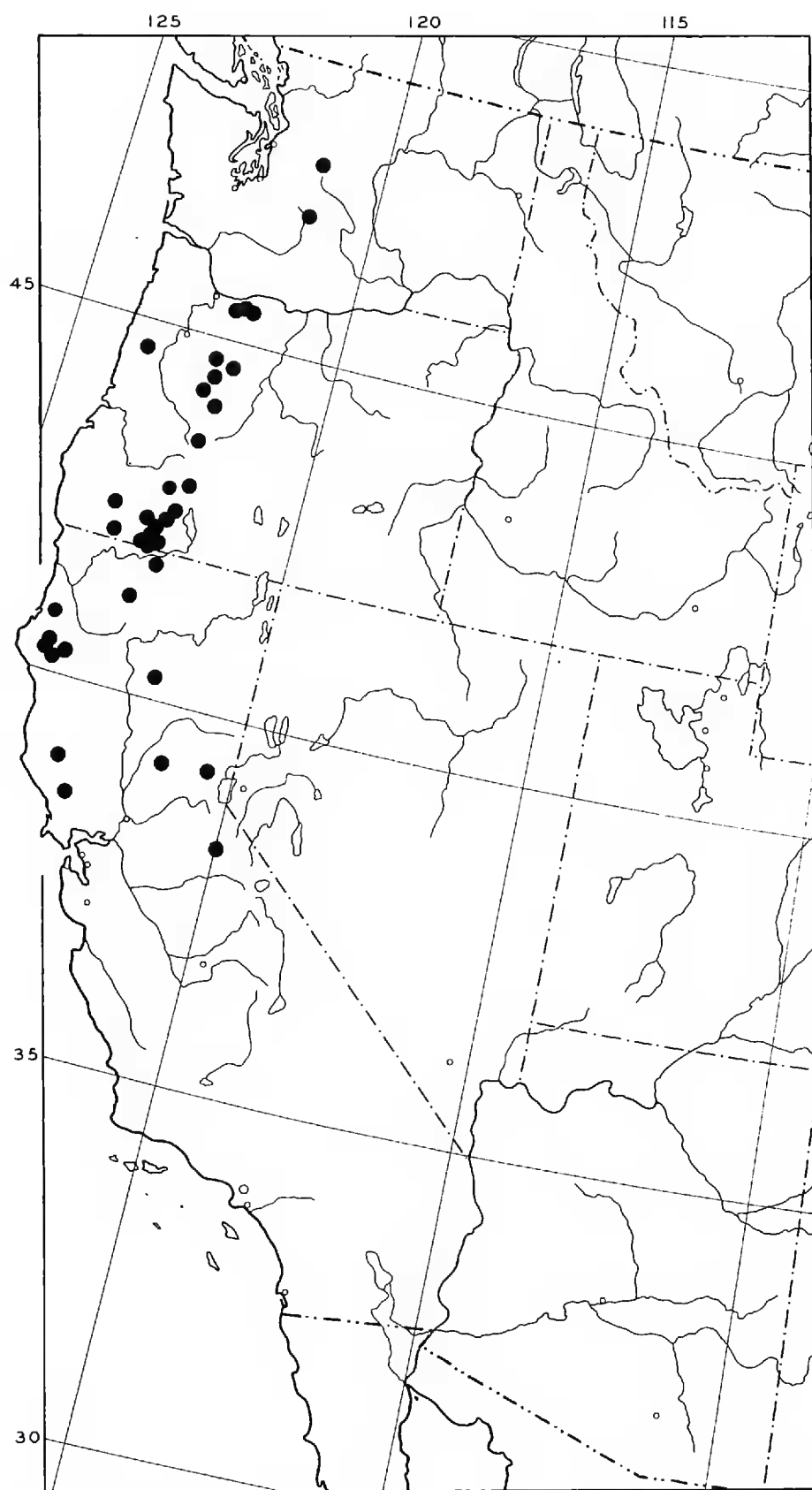


Figure 4. Distribution of *Allorhinocoris speciosus*.

and J. Schuh, 5 ♂, 5 ♀, 10 nymphs (AMNH). *Lane Co.*: Ray Crk., 8 mi S of Waldo Lk., July 26, 1972, L. Russell, 1 ♂. *Lane-Linn Cos.*: H. J. Andrews Experimental Forest, 11 mi NE of Blue River: July 29, 1981, J. D. Lattin, 2 ♂, 1 ♀; Aug. 13, 1981, 1 ♂, 5 ♀; July 16, 1988, A. Asquith, ex *Linnaea borealis*, 3 ♀. *Linn Co.*: Iron Mt., 6 mi E of Upper Soda, 5000 ft, Aug. 11, 1962, R. L. Fischer, 3 ♂, 10 ♀; Monument Peak, 4400 ft, July 23, 1961, D. R. Smith, 1 ♂ or ♀; Mt. Jefferson, Pamela Lk. Trail, 3000 ft, July 25, 1907, J. C. Bridwell: 1 ♂ (OSU); 1 ♀ (CAS), H. H. Knight collection, 1 ♂ (USNM). Tombstone Prairie, Aug. 22, 1975, W. N. Mathis, 1 ♂, 2 ♀. WASHINGTON: *Kittitas Co.*, Wenatchee Nat'l. For., Hyas Lk. Trail, 4200 ft, July 15, 1979, Schwartz, sweeping undisturbed natural vegetation, 2 ♂

(AMNH). *Yakima Co.*, Rainier Nat'l. For. [sic Mt. Baker—Snoqualmie Nat'l. For.], Lodgepole Camp[ground], Aug. 10, 1932, A. R. Rolf, H. H. Knight collection, 2 ♂ (CNC, USNM).

Distribution and habits.—*Allorhinocoris speciosus* occurs in the Coast and the Cascade Mountain ranges of western North America, from Toulumne County, California in the south to Pierce County, Washington in the north (Fig. 4). It is possible that *speciosus* will eventually be found further north in British Columbia and southern Alaska.

This species occurs at relatively high elevations, and is commonly taken above 1524 m (5000 ft). We have no records of it from below 914 m (3000 ft). Similarly, *flavus* occurs in the mountains of midlatitude Eurasia, but is also found in northern boreal habitats, whereas *speciosus* has not yet been recorded from higher latitudes in North America. As expected with most species inhabiting higher elevations, *speciosus* is active from mid to late summer. In California, specimens have been collected from mid May to early August, and in Oregon from late June to early September. Nymphs and adults were taken on June 27 from Josephine County in southern Oregon. The majority of specimens have been collected between July 15 and August 15.

Indications from the literature and the collection records on hand suggest that *Allorhinocoris* is polyphagous. Bliven (1960) reported that most of his specimens were collected on snowberry (*Symphoricarpos*, Caprifoliaceae). Specimens examined for this study were collected on *Linnaea borealis* (Caprifoliaceae), *Phacelia hastata*, *P. heterophylla* (Hydrophyllaceae), *Vicia* sp. (Fabaceae), and *Wyethia amplexicaulis* (Asteraceae). In the laboratory, specimens were observed feeding on the stems and flowers of *L. borealis*. Both nymphs and adults were collected on *Scrophularia* sp. (Scrophulariaceae) on Mary's Peak, Oregon and another series of adults on *Penstemon* spp. (Scrophulariaceae) on Mt. Ashland, Oregon. Specimens were usually taken from low herbaceous plants in cool, moist shaded areas. In Russia, *flavus* has been reported to feed on *Caragana* and other legumes (Kerzhner, 1967, 1988). Our observations may indicate that *speciosus* is habitat specific rather than host-plant specific.

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